

W Y O M I N G CAREERS[®]



Courtesy of
National
Science
Foundation



*Science, Technology,
Engineering & Mathematics*

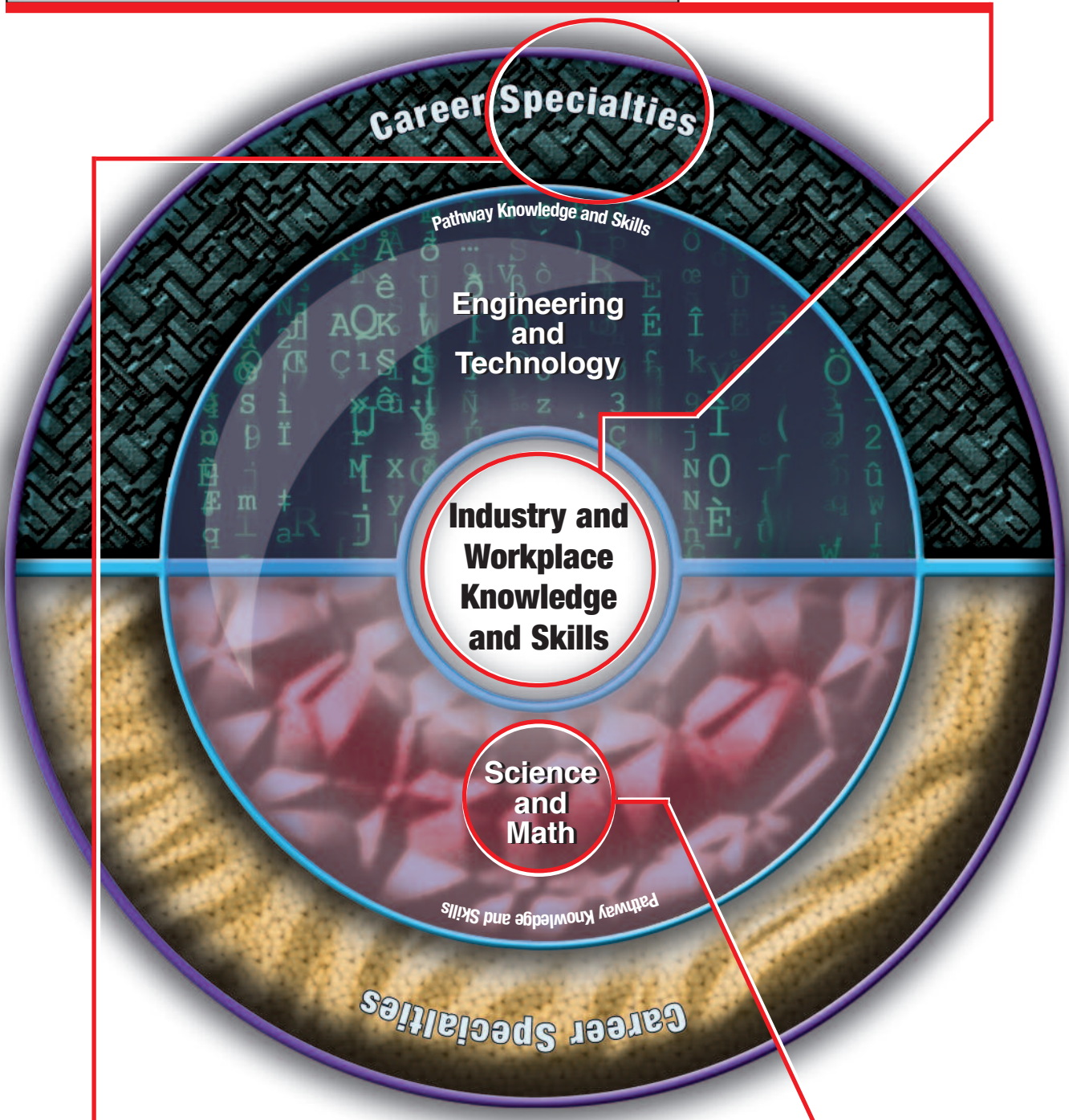
Planning, managing and providing scientific research and professional and technical services including laboratory and testing services, and research and development services.

Career Cluster Guide

2009-2010

CAREER CLUSTER MODEL

Industry and workplace knowledge and skills are taught and reinforced in all pathways and at all levels.



Highly specific career specialty skills are taught at the postsecondary level by colleges, trade schools, apprenticeships or other training options.

High schools offer some or all pathways to students and teach pathway-specific knowledge and skills.

PATHWAY

SPECIFIC OCCUPATIONS

Engineering and Technology

- Aerospace Engineer
- Aeronautical Engineer
- Agricultural Engineer
- Agricultural Technician
- Application Engineer
- Architectural Engineer
- Automotive Engineer
- Biomedical Engineer
- Biotechnology Engineer
- Chemical Engineer
- Civil Engineer
- Communications Engineer
- Computer Engineer
- Computer Hardware Engineer
- Computer Programmer
- Computer Science Technician
- Computer Software Engineer
- Construction Engineer
- Consultant
- Development Engineer
- Drafter
- Electrical Engineer
- Electrician
- Electronics Technician
- Energy Transmission Engineer
- Environmental Engineer

- Facilities Technician
- Fire Protection Engineer
- Geothermal Engineer
- Hazardous Waste Engineer
- Hazardous Waste Technician
- Human Factors Engineer
- Industrial Engineer
- Industrial Engineering Technician
- Licensing Engineer
- Manufacturing Engineer
- Manufacturing Technician
- Manufacturing Processes Engineer
- Marine Engineer
- Materials Engineer
- Materials Lab and Supply Technician
- Mechanical Engineer
- Metallurgic Engineer
- Mining Engineer
- Naval Engineer
- Network Technician
- Nuclear Engineer
- Ocean Engineer
- Operations Research Engineer
- Packaging Engineer
- Packaging Technician
- Petroleum Engineer

- Pharmaceutical Engineer
- Plastics Engineer
- Power Systems Engineer
- Product Design Engineer
- Project Engineer
- Project Manager
- Prototype Engineer
- Quality Engineer
- Quality Technician
- Radio/TV Broadcast Technician
- Radiology Engineer
- Researcher
- Safety Engineer
- Software Engineer
- Sound Technician
- Structural Engineer
- Survey Technician
- Systems Design Engineer
- Technical Sales Manager
- Technical Writer
- Telecommunications Engineer
- Textile Engineer
- Transportation Engineer

Science and Math

- Analytical Chemist
- Anthropologist
- Applied Mathematician
- Archeologist
- Astronomer
- Astrophysicist
- Atmospheric Scientist
- Biologist
- Botanist
- CAD Operator
- Cartographer
- Chemist
- Communications Technologist
- Conservation Scientist
- Cosmologist
- Cryptographer
- Crystallographer
- Demographer
- Dye Chemist
- Ecologist
- Economist
- Electronmicroscopist
- Environmental Scientist
- Expert Systems Scientist

- Geneticist
- Geologist
- Geophysicist
- Geoscientist
- Herpetologist
- Hydrologist
- Ichthyologist
- Inorganic Chemist
- Laboratory Technician
- Mammalogist
- Marine Scientist
- Materials Analyst
- Materials Scientist
- Mathematician
- Mathematics
- Metallurgist
- Meteorologist
- Microbial Physiologist
- Mycologist
- Nanobiologist
- Nuclear Chemist
- Nuclear Technician
- Numerical Analyst
- Nutritionist

- Oceanographer
- Organic Chemist
- Ornithologist
- Paleontologist
- Physicist
- Polymer Scientist
- Programmer
- Protein Scientist
- Protozoologist
- Quality-Control Scientist
- Radio Chemist
- Research Chemist
- Research Technician
- Science Teacher
- Lab Technician
- Scientific Visualization/ Graphics Expert
- Spectroscopist
- Statistician
- Technical Writer
- Technologist
- Toxicologist
- Zoologist



Wyoming's Highest-Paying, Fastest-Growing Jobs

Title	Basic Description O*NET/SOC Description (may be truncated)	Anticipated Total 2014 Employment	
Source: See footnote #1	Source: See footnote #1	Source: See footnote #1	
Civil engineering technicians	Apply theory and principles of civil engineering in planning, designing, and overseeing construction and maintenance of structures and facilities under the direction of engineering staff or physical scientists.	239	
Civil engineers	Perform engineering duties in planning, designing, and overseeing construction and maintenance of building structures and facilities, such as roads, railroads, airports, bridges, harbors, channels, dams, irrigation projects, pipelines, power plants, water and sewage systems, and waste disposal units.	931	
Electrical and electronic engineering technicians	Apply electrical and electronic theory and related knowledge, usually under the direction of engineering staff, to design, build, repair, calibrate, and modify electrical components, circuitry, controls, and machinery for subsequent evaluation and use by engineering staff in making engineering design decisions.	268	
Electrical engineers	Design, develop, test, or supervise the manufacturing and installation of electrical equipment, components, or systems for commercial, industrial, military, or scientific use.	221	
Environmental engineers	Design, plan, or perform engineering duties in the prevention, control, and remediation of environmental health hazards utilizing various engineering disciplines.	176	
Environmental scientists and specialists, including health	Conduct research or perform investigation for the purpose of identifying, abating, or eliminating sources of pollutants or hazards that affect either the environment or the health of the population.	272	
Geological and petroleum technicians	Assist scientists in the use of electrical, sonic, or nuclear measuring instruments in both laboratory and production activities to obtain data indicating potential sources of metallic ore, gas, or petroleum.	408	
Geoscientists, except hydrologists and geographers	Study the composition, structure, and other physical aspects of the earth.	338	
Hydrologists	Research the distribution, circulation, and physical properties of underground and surface waters and study the form and intensity of precipitation, its rate of infiltration into the soil, movement through the earth, and its return to the ocean and atmosphere.	162	

1. Source: doe.state.wy.us/lmi
2. Source: www.careerinfonet.org

Science, Technology, Engineering & Mathematics

	Wyoming Number of New Jobs, Projected 2004-2014	Wyoming Estimated Hourly Average Wage	Wyoming Estimated Yearly Wage	Most Common Education/ Training	Suggested Programs of Study	Is at least one of these programs available in Wyoming?
	Source: See footnote #1	Source: See footnote #1	Source: See footnote #1	Source: See footnote #2	Source: See footnote #2	
	48	\$19.11	\$39,769	Associate degree	<ul style="list-style-type: none"> • Civil Engineering Technology • Construction Engineering Technology 	Yes
	181	\$29.86	\$62,114	Bachelor's degree	<ul style="list-style-type: none"> • Civil Engineering, • Transportation and Highway Engineering • Water Resources Engineering 	Yes
	47	\$26.56	\$55,249	Associate degree	<ul style="list-style-type: none"> • Computer Engineering Technology • Computer Technology/ Computer Systems • Electrical and Electronic Engineering Technologies • Engineering Technology 	Yes
	54	\$30.52	\$63,467	Bachelor's degree	<ul style="list-style-type: none"> • Electrical, Electronics and Communications Engineering 	Yes
	53	\$30.95	\$64,365	Bachelor's degree	<ul style="list-style-type: none"> • Environmental/Environmental Health Engineering 	Yes
	50	\$24.24	\$50,420	Master's degree	<ul style="list-style-type: none"> • Environmental Science • Environmental Studies 	Yes
	168	\$22.89	\$47,608	Associate degree	<ul style="list-style-type: none"> • Petroleum Technology 	Yes
	78	\$32.32	\$67,241	Master's degree	<ul style="list-style-type: none"> • Geochemistry • Geological and Earth Sciences/Geosciences • Geophysics and Seismology 	Yes
	44	\$26.84	\$55,829	Master's degree	<ul style="list-style-type: none"> • Geology/Earth Science • Hydrology and Water Resources Science • Oceanography, Chemical and Physical 	Yes

For additional information
and resources, go to:

http://www.wyomingworkforce.org/resources/links_career.aspx

Wyoming's Highest-Paying, Fastest-Growing Jobs

Title	Basic Description O*NET/SOC Description (may be truncated)	Anticipated Total 2014 Employment	
Source: See footnote #1	Source: See footnote #1	Source: See footnote #1	
Industrial engineers	Design, develop, test, and evaluate integrated systems for managing industrial production processes including human work factors, quality control, inventory control, logistics and material flow, cost analysis, and production coordination.	287	
Mechanical drafters	Prepare detailed working diagrams of machinery and mechanical devices, including dimensions, fastening methods, and other engineering information.	102	
Mechanical engineers	Perform engineering duties in planning and designing tools, engines, machines, and other mechanically functioning equipment. Oversee installation, operation, maintenance, and repair of such equipment as centralized heat, gas, water, and steam systems.	181	
Mining and geological engineers, including mining safety engineers	Determine the location and plan the extraction of coal, metallic ores, nonmetallic minerals, and building materials, such as stone and gravel.	247	
Zoologists and wildlife biologists	Study the origins, behavior, diseases, genetics, and life processes of animals and wildlife.	274	



Engineers of many varieties are in very short supply in Wyoming; a great deal of Wyoming's needs are being met at present by outsourcing to contractors from out of state.

1. Source: doe.state.wy.us/lmi
2. Source: www.careerinfonet.org

Science, Technology, Engineering & Mathematics

	Wyoming Number of New Jobs, Projected 2004-2014	Wyoming Estimated Hourly Average Wage	Wyoming Estimated Yearly Wage	Most Common Education/ Training	Suggested Programs of Study	Is at least one of these programs available in Wyoming?
	Source: See footnote #1	Source: See footnote #1	Source: See footnote #1	Source: See footnote #2	Source: See footnote #2	
	99	\$33.89	\$70,502	Bachelor's degree	• Industrial Engineering	Yes
	31	\$21.22	\$44,141	Postsecondary vocational award	• Mechanical Drafting and Mechanical Drafting CAD/CADD	Yes
	54	\$34.06	\$70,837	Bachelor's degree	• Mechanical Engineering	Yes
	68	\$40.27	\$83,763	Bachelor's degree	• Mining and Mineral Engineering	Yes
	37	\$23.69	\$49,273	Bachelor's degree	• Animal Behavior and Ethology • Cell/Cellular Biology and Anatomical Sciences • Wildlife Biology • Wildlife and Wildlands Science and Management	Yes



For additional information and resources, go to:
http://www.wyomingworkforce.org/resources/links_career.aspx

Surveying is in constant demand, particularly in mineral leasing, community development, and many other areas.

At present, the need for geologists, health scientists, and other advanced sciences is far outstripping the supply in Wyoming.

PROGRAMS OF STUDY

WYOMING COMMUNITY COLLEGES

Science, Technology, Engineering & Mathematics

Casper College

Central Wyoming College

Eastern Wyoming College

Laramie County
Community College

Northwest College

Northern Wyoming
Community College District

Western Wyoming
Community College

MAJORS

Agriculture Science

Agroecology

Animal Science

Anthropology

Applied Statistics

Archaeology

Archeology Technology, Archeological Technician

Biological Science

Biology

Chemical Technician

Chemistry

Computer Electronics Technology

Computer Science

Earth and Environmental Science

EHS – Environmental Technician

Electric Power Technology

Electrical and Instrumentation Technology

Electricity

Electronics Technology

Electronics/Instrumentation/Control Technology

Engineering

Engineering Science

Engineering Technology

Engineering Technology – Drafting and Design, General

Environmental Science

AS - Associate of Sciences
AA - Associate of Arts
AAS - Associate of Applied Sciences
C - Certificate

AA, AS

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AS, AAS

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AA, AS

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PROGRAMS OF STUDY

WYOMING COMMUNITY COLLEGES

Science, Technology,
Engineering &
Mathematics

Casper College

Central Wyoming College

Eastern Wyoming College

Laramie County
Community College

Northwest College

Northern Wyoming
Community College District

Western Wyoming
Community College

MAJORS

Environmental Science (Biology-Option B)

Environmental Science and Leadership

Equine Business Management

Equine Riding and Training

Equine Training Technology

Extractive Resources Technology

Farrier Science

Fire Science Technology

Food and Meat Science

Forensic Science

Fundamentals of Integrated Systems Technology

General Science

General Studies in Social Sciences

General Studies – Science

General Technology

Geographic Information Systems

Geology

Government Studies

History

Horse Science

Horticulture

Industrial Electricity/Electronics

Industrial Electronics

Industrial Maintenance Mechanics – Welding Technician

Instrumentation Technology

International Studies

AS - Associate of Sciences
AA - Associate of Arts
AAS - Associate of Applied Sciences
C - Certificate

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PROGRAMS OF STUDY

WYOMING COMMUNITY COLLEGES

Science, Technology, Engineering & Mathematics

Casper College

Central Wyoming College

Eastern Wyoming College

Laramie County
Community College

Northwest College

Northern Wyoming
Community College District

Western Wyoming
Community College

MAJORS

Mathematics

Mathematics – Secondary Education

Mine Maintenance Technician

Natural Resource Biology

Physical Education

Physical Science

Physics

Political Science

Power Plant Maintenance Mechanics

Pre-Engineering

Pre-Health Professional

Pre-Professional Sciences

Psychology

Rangeland Ecology and Watershed Management –
General Agriculture Option

Robotic Technology

Robotics Technology Skills

Social Science

Sociology

Statistics

Surveying Technology

Technical Studies

Technical Studies in Electrical Technology

Vet Assistant

Veterinary Technology

Water Quality Technology

Wind Power Technician/Wind Power Technology

AS - Associate of Sciences
AA - Associate of Arts
AAS - Associate of Applied Sciences
C - Certificate

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UNIVERSITY OF WYOMING

COLLEGE OF AGRICULTURE

Bachelor's Master's Doctorate

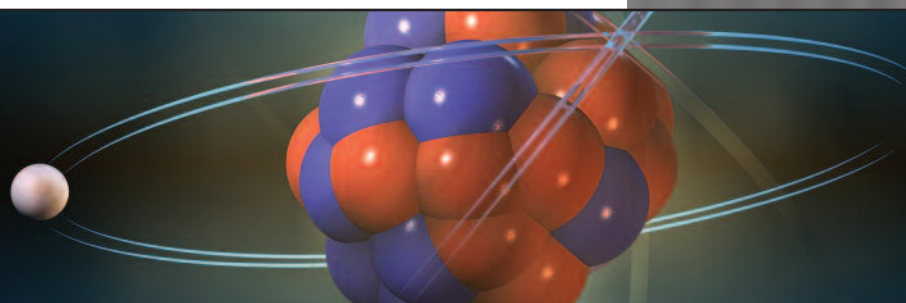
MAJORS

Agroecology	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Agronomy	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Animal and Veterinary Science	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Entomology	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Food Science and Human Nutrition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Molecular Biology	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Rangeland Ecology and Watershed Management	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Rangeland Ecology and Watershed Management/Water Resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Soil Science	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

COLLEGE OF ARTS AND SCIENCES

MAJORS

Astronomy/Astrophysics	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Biology	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Botany	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Botany/Water Resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chemistry	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Chemistry – Professional	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environmental Geology/Geohydrology	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geography/Water Resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geology	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Geology and Earth Sciences	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geology/Water Resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geophysics	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Mathematics	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Mathematics/Science	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Natural Science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Neuroscience	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Physics	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Physics Plus	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Statistics	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Wildlife and Fisheries Biology and Management	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Zoology and Physiology	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Zoology and Physiology/Water Resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



UNIVERSITY OF WYOMING

COLLEGE OF EDUCATION

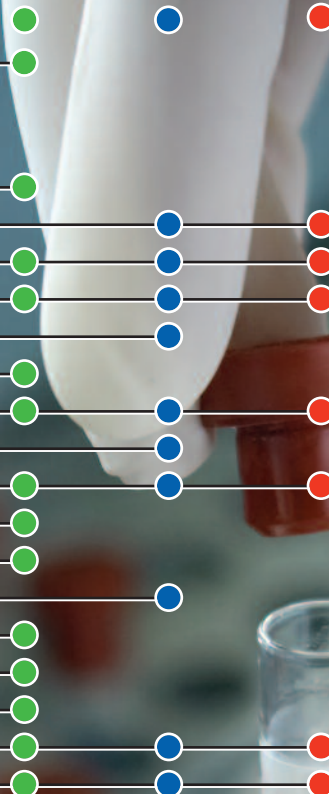
MAJOR Trades and Industrial Technology Education (UW Casper Only)

COLLEGE OF ENGINEERING

MAJORS

Architectural Engineering
 Atmospheric Science
 Chemical Engineering
 Civil Engineering
 Civil Engineering – Environmental Water Resources
 Computer Engineering
 Computer Science
 Computer Science – Professional
 Electrical Engineering
 Electrical Engineering – Bioengineering
 Electrical Engineering – Computer Engineering
 Environmental Engineering
 Management Information Systems
 Management Information Systems – Business
 Management Information Systems – Computer Science
 Mechanical Engineering
 Petroleum Engineering

Bachelor's Master's Doctorate



COLLEGE OF HEALTH SCIENCES

MAJOR Kinesiology and Health
 Kinesiology and Health Promotion

INTERDISCIPLINARY MAJORS*

MAJORS

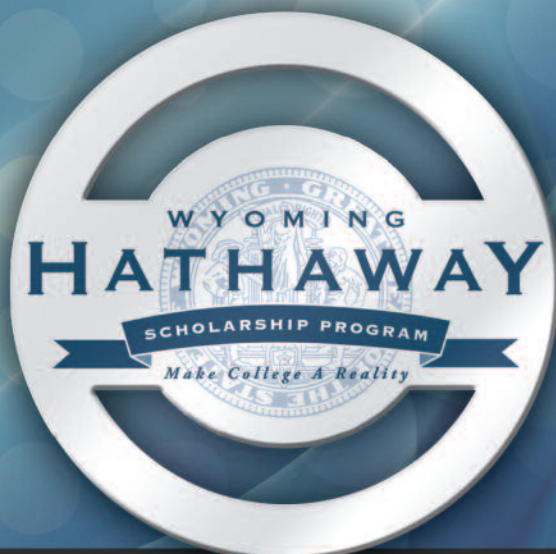
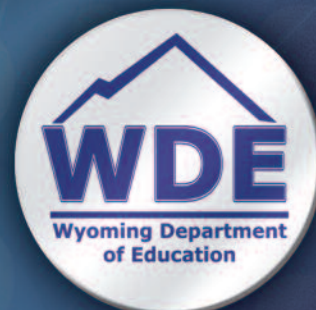
Earth Systems Science
 Multiple options
 Environmental and Natural Resources Affiliated Major
 Multiple options
 Microbiology
 Offered by Agriculture, Arts and Sciences, and Health Sciences
 Reproductive Biology
 Offered by Agriculture and Arts and Sciences



*Combination programs that cross over more than one discipline. May be signed up for in any of the listed colleges.

Degree: An award conferred by a college or university signifying that the recipient has satisfactorily completed a defined academic or vocational-technical program of study: Associate of Arts, Associate of Science, Associate of Applied Science, Bachelor of Arts, or Bachelor of Science.

Certificate: An official document issued to a student by a college or university attesting to the training, aptitude and/or qualification gained from the satisfactory completion of a defined program of study. Credit hours vary from 0 to 60 credit hours and are awarded for attendance or specific skills gained. (Attendance requirements vary from one hour to two years of study, depending upon program requirements.)



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Future versions of the Wyoming Career Cluster Guides and accompanying Planning Guide may be modified in terms of content and format based upon user input. Please direct all suggestions and inquiries in writing to:

Career Cluster Coordinator
Wyoming Department of Education
2300 Capitol Avenue
Hathaway Building, 2nd Floor
Cheyenne, WY 82002-0050



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States' Career Clusters Initiative 2006
www.careerclusters.org